

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) An optoelectronic assembly for a computer system, comprising:

an electronic chip set;

a printed circuit board;

a substrate disposed between the electronic chip set and the printed circuit board, the substrate comprising a first major surface opposing a second major surface, wherein the first major surface is in communication with the electronic chip set[[;]], and wherein the second major surface is in electrical communication with the printed circuit board;

an electrical signaling medium having a first end in signal communication with the substrate;

an optoelectronic transducer in signal communication with a second end of the electrical signaling medium; and

an optical coupling guide for aligning an optical signaling medium with the optoelectronic transducer;

wherein an electrical signal from the electronic chip set is communicated to the optoelectronic transducer via the substrate and the electrical signaling medium, and

wherein the electronic chip set and the optoelectronic transducer share a common thermal path for cooling;

a heat spreader having a first and second surface, the first surface in thermal contact with the electronic chip set and adapted to provide unimpeded heat flow, and the second surface in thermal contact with the optoelectronic transducer, the first surface

being orthogonal to the second surface, the optoelectronic transducer being mounted on the second surface.

2. (Canceled)

3. (Original) The assembly of Claim 1, wherein:

the electronic chip set comprises a processor chip, a memory chip a signal processing chip, a switching chip, or any combination thereof; and

the substrate comprises a multi-chip module, a dual-chip module, a single-chip module, or any combination thereof.

4. (Original) The assembly of Claim 1, wherein the substrate is an organic or a ceramic substrate containing electrical interconnects.

5. (Currently Amended) The assembly of Claim 1, wherein:

the electrical signaling medium is a flexible printed circuit board; and

the substrate comprises ~~a first major surface in communication with the electronic chip set, a second major surface opposing the first surface, and~~ an edge surface disposed between the first and second major surfaces.

6. (Original) The assembly of Claim 1, wherein the optoelectronic transducer comprises:

an integrated circuit in communication with the second end of the electrical signaling medium; and

a laser, a vertical cavity surface emitting laser, a light emitting diode, a photodiode, or other light emitting or photosensitive device array, in electrical communication with the integrated circuit.

7. (Original) The assembly of Claim 1, wherein the optical coupling guide is a set of alignment pins.

8. (Original) The assembly of Claim 5, wherein the first end of the flexible printed circuit board is in communication with the first major surface of the substrate.

9. (Original) The assembly of Claim 5, wherein the first end of the flexible printed circuit board is in communication with the second major surface of the substrate.

10. (Original) The assembly of Claim 5, wherein the first end of the flexible printed circuit board is in communication with the edge surface of the substrate.

11. (Currently Amended) An optoelectronic assembly for a computer system, comprising:

an electronic chip set adapted for at least one of data processing, data switching, and data storage;

a substrate comprising a first major surface in electrical communication with the electronic chip set, a second major surface opposing the first surface, and an edge surface disposed between the first and second surfaces;

an electrical signaling medium having a first end in signal communication with the substrate;

an optoelectronic transducer in signal communication with a second end of the electrical signaling medium; and

an optical coupling guide for aligning an optical signaling medium with the optoelectronic transducer;

a printed circuit board in communication with the second major surface of the substrate;

wherein an electrical signal from the electronic chip set is communicated to the optoelectronic transducer via the substrate and the electrical signaling medium, and

wherein the electronic chip set and the optoelectronic transducer share a common thermal path for cooling,

wherein the electrical signaling medium is a flexible printed circuit board; ~~and the substrate comprises a first major surface in communication with the electronic chip set, a second major surface opposing the first surface, and an edge surface disposed between the first and second surfaces;~~

wherein the flexible printed circuit board is absent electrical signal interconnections except for electrical signal interconnections between the substrate and the optoelectronic transducer.

12. (Original) The assembly of Claim 9, wherein:

the second major surface of the substrate includes a shelf or recess; and

the first end of the flexible printed circuit board is in communication with the substrate at the shelf or recess.

13. (Previously Presented) The assembly of Claim 1, further comprising a second optoelectronic transducer in thermal contact with the second surface of the thermal spreader, the first and second optoelectronic transducers being offset from one another in at least one of a vertical direction and a horizontal direction.

14. (Original) The assembly of Claim 3 wherein the electronic chip set comprises signal multiplexing and coding functions for driving an e/o device directly, and functions for receiving a signal directly from an o/e device.

15. – 19. (Canceled)

20. (Currently Amended) The assembly of Claim 1, further comprising:

at least a second optoelectronic transducer in thermal contact with the second surface of the thermal spreader, the first and at least a second optoelectronic transducers

being offset from each other in ~~at least one of~~ both a vertical direction and a horizontal direction, thereby improving packing density of the optoelectronic transducers on the thermal spreader.

21. (Previously Presented) The assembly of Claim 1 wherein the optical coupling guide is mounted on the second surface.